

REMARKS

Claims 1-29, 31, and 32 are pending in the application. Applicants express appreciation for the indication that claims 5, 6, 14, 15, 19-21, 31, and 32 are directed to allowable subject matter and that claims 22-29 would be allowable if the 35 USC 112 rejection is addressed. By way of correction to the record, Applicants note that some confusion exists regarding the status of claims indicated in the Office Action Summary and pages 3-4 of the Office Action.

Specifically, item 4 of the Summary lists only rejected claims instead of all currently pending claims 1-29, 31, and 32. Item 4a lists claims 30 and 33 as withdrawn, but such claims were previously cancelled. Item 5 lists claims 22-29 as allowed, but such claims are rejected under 35 USC 112 even though they otherwise set forth allowable subject matter. In addition, pages 3-4 of the Office Action list claims 19 and 20 as anticipated even though pages 7-8 clearly indicate that such claims set forth allowable subject matter. In preparing the present response, Applicants assumed that claims 1-29, 31, and 32 are pending in the application with claims 1-4, 7-13, and 16-18 rejected and the remaining claims objected to, but otherwise setting forth allowable subject matter.

Claims 1, 10, 22, and 25 stand rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which is not described in the specification. Applicants request reconsideration. Applicants note that page 8, lines 8-11 of the present specification state that second layer 16 shown in Figs. 1-6 can be formed by methods described in the Background section. Page 3, line 7 to page 4, line 17 of the Background section describe one example of a suitable method for forming second layer 16. Page 3, lines 21-23 makes specific reference to "deposited Si(OH)₄". Page 4, lines 12-13 states that formation of methylsilicon oxide can be accomplished similarly, which would include "deposited"

$(\text{CH}_3)_z\text{Si}(\text{OH})_{4-z}$. It is thus clear that the present specification supports “depositing” a layer such as set forth in claims 1, 10, 22, and 25. Also, it is clear that the present specification describes the deposited layer as comprising the claimed composition “as initially deposited.”

Further, Applicants assert that claim terms need not be used exactly as they appear in the specification to satisfy the written description requirement. Eiselstein v. Frank, 52 F.3d 1035, 1038, 34 USPQ2d 1467, 1470 (Fed. Cir. 1995); In re Wertheim, 541 F.2d 257, 265, 191 USPQ 90, 98 (CCPA 1976). Applicants also assert that substantial correspondence exists between the language of claims 1, 10, 22, and 25 and the language of the present specification. Accordingly, Applicants request withdrawal of the written description rejection in the next Office Action.

Claims 10-13 and 18-20 stand rejected under 35 U.S.C. 102(b) as being anticipated by Sachdev. Applicants request reconsideration.

Claim 10 sets forth a method that includes, among other features, depositing a layer of material containing silicon and oxygen, as initially deposited, over a substrate, exposing some portions of the layer to energy while leaving other portions unexposed, and subjecting the exposed and unexposed portions of the layer to common conditions. The exposing to energy alters physical properties of the exposed portions relative to the unexposed portions. The common conditions some silicon-comprising material and provide a rate of removal that is influenced by the altered physical properties of the layer. The common conditions remove either the exposed or unexposed portions faster than the other of the exposed and unexposed portions. Page 3 of the Office Action alleges that Sachdev anticipates claim 10. Applicants traverse.

Review of Sachdev reveals that barrier film 7 containing plasma polymerized organosilicon constitutes the only material that can be considered to contain silicon and oxygen, as initially deposited. Applicants acknowledge that column 4, lines 39-51 describe photolithographic processing of resist layer 8. However, resist layer 8 is not disclosed by Sachdev as comprising silicon and oxygen, as set forth in claim 10 for the deposited layer of material. The photolithographic processing removes selected portions of resist layer 8 to pattern the resist. Even so, the photolithographic processing apparently has no effect on plasma polymerized organosilicon film 7 since column 4, lines 47-51 describe using the patterned resist layer 8 as a mask to perform RIE and form openings in barrier film 7. Thus, the photolithographic processing cannot be considered to alter physical properties of plasma polymerized organosilicon barrier film 7. In addition, Sachdev at column 4, lines 30-33 states that plasma polymerized organosilicon films are resistant to most development and lift-off solvents and have essentially zero etch rate in oxygen plasma or RIE.

Applicants note that claim 10 sets forth, after the exposing, subjecting the exposed and unexposed portions of the layer to common conditions. Applicants assert that Sachdev does not disclose or suggest subjecting any layer of material containing silicon and oxygen to common conditions effective to remove material with altered physical properties. The Sachdev RIE does not disclose the claimed limitation since the RIE only occurs with patterned resist layer 8 over barrier film 7. Thus, the RIE of column 4, lines 47-51 cannot be considered to subject exposed and unexposed portions of the layer to common conditions and to provide a removal rate influenced by altered physical properties since resist layer 8 remains over certain portions of barrier film 7.

Applicants acknowledge that the Office might be applying Sachdev to claim 10 in a manner different than described above. However, it is impossible for Applicants to understand how Sachdev is applied since the Office Action fails to comply with 35 CFR 1.104(c)(2). That is, page 3 of the Office Action merely restates the text of claim 10 and alleges that it is disclosed in column 3, line 42 to column 4, line 64 of Sachdev. Accordingly, the Office Action does not designate as nearly as practicable the particular part of Sachdev relied upon. Further, the pertinence of Sachdev is not apparent and is not clearly explained. At least for such reason, the ground of rejection is defective and should be clarified in a non-final action or withdrawn.

Applicants acknowledge another alternative is that the Office may consider the RIE of column 4, lines 47-51 to disclose the claimed exposing of some portions of the layer containing silicon and oxygen to energy while leaving other portions unexposed. However, claim 10 expressly sets forth, after the exposing, subjecting the exposed and unexposed portions of the layer to common conditions effective to remove material with altered physical properties. Since the column 4, lines 47-51 RIE removes portions of barrier film 7 exposed to energy of the RIE, any later processing cannot be considered to subject exposed and unexposed portions of the claimed layer containing silicon and oxygen to common conditions. The portions of barrier film 7 exposed to the Sachdev RIE no longer exist and it is impossible to thereafter to subject them to common conditions along with unexposed portions.

Column 4, lines 52-58 of Sachdev describe another RIE, however it also cannot be considered to disclose or suggest the claimed subjecting to common conditions. It is impossible for the column 4, lines 52-58 RIE to disclose common conditions providing a rate of removal that is influenced by altered physical properties of barrier film 7. The only

altered physical property accomplished by the RIE of column 4, lines 47-51 is to remove exposed portions of barrier film 7. Such altered physical property thus cannot somehow be considered to influence the rate of removal of exposed portions of barrier film 7 compared to unexposed portions.

In keeping with the assertions above, Applicants assert that the photolithographic processing of column 4, lines 39-47 does not disclose the claimed exposure of some portions of the layer containing silicon and oxygen to energy while leaving other portions unexposed where the exposing alters physical properties of the exposed portions relative to the unexposed portions. Applicants also assert that the RIE of column 4, lines 47-51 does not disclose or suggest the claimed subjecting of exposed and unexposed portions of the layer to common conditions. Applicants further assert that the RIE of column 4, lines 52-58 also does not disclose or suggest the claimed subjecting of exposed and unexposed portions of the layer to common conditions that provide a rate of removal influenced by physical properties of the layer altered during exposure of some portions to energy while leaving other portions unexposed. At least for such reasons, Sachdev fails to disclose each and every element of claim 10 and does not anticipate claim 10.

Claims 11-13, and 18 depend from claim 10 and are not anticipated at least for such reason as well as for the additional limitations of such claims not disclosed or suggested. Claims 19 and 20 listed on page 3 of the Office Action are mistakenly rejected since page 7 of the Office Action lists such claims as setting forth allowable subject matter. Applicants request allowance of claims 10-13 and 18-20 in the next Office Action.

Claims 10-13 and 18-20 stand rejected under 35 U.S.C. 102(e) as being anticipated by Leveriza. Applicants request reconsideration.

The subject matter of claim 10 is described above. Page 4 of the Office Action alleges that Leveriza anticipates claim 10. Applicants traverse.

Column 1, lines 25-55 of Leveriza merely describe coating a substrate containing oxidized silicon with a film of photosensitive resist and developing the resist. In contrast, claim 10 sets forth that a layer including silicon and oxygen is exposed to energy that alters physical properties of exposed portions relative to unexposed portions. After the exposing, claim 10 sets forth subjecting the exposed and unexposed portion of the layer to common conditions that provide a rate of removal influenced by the altered physical properties of the layer. Leveriza does not disclose that any physical properties of the oxidized silicon substrate are altered during the processing described in column 1, lines 25-55. Also, the photosensitive resist listed in column 1, lines 25-55 is not described as including silicon and oxygen. Thus, processing of such resist cannot be considered to disclose the claimed exposing of some portions of the layer to energy.

Further, the oxidized silicon substrate is not described in column 1, lines 25-55 as having exposed and unexposed portions subjected to common conditions such as set forth in claim 10. Instead, portions of the patterned photosensitive resist remain over the oxidized silicon substrate, preventing portions of the oxidized silicon substrate from being subjected to the common conditions. Accordingly, it does not appear that exposed, as well as unexposed, portions of the oxidized silicon substrate are subjected to any common conditions.

At least for the reasons described herein, Leveriza does not disclose each and every element of claim 10 and does not anticipate such claim. Claims 11-13 and 18 depend from claim 10 and are not anticipated at least for such reason as well as for the additional limitations of such claims. Claims 19 and 20 are mistakenly listed as rejected

since page 7 of the Office Action indicates that such claims set forth allowable subject matter. Applicants request allowance of claims 10-13 and 18-20 in the next Office Action.

Claims 1-2 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Naik in view of Wolf. Applicants request reconsideration.

Page 1 sets forth a method that includes, among other features, forming a layer of material containing oxygen, as initially deposited, over a semiconductive wafer substrate, exposing some portions of the layer to energy while leaving other portions unexposed, and subjecting the exposed and unexposed portions of the layer to common conditions after the exposing. The exposing alters physical properties of the exposed portions of the material relative to the unexposed portions. The common conditions provide a rate of material removal influenced by the altered physical properties of the layer. The method includes cutting the wafer into separated die after the selective removal of the exposed or unexposed portions and while the other of the exposed and unexposed portions remain over the substrate. Page 5 of the Office Action alleges that Naik discloses the claimed method except for cutting the wafer into separated die and relies upon Wolf as allegedly disclosing the missing feature. Applicants traverse.

Page 5 of the Office Action states that Naik discloses that "forming a layer comprises silicon (PPMS) over a substrate." However, claim 1 sets forth forming a layer of material containing oxygen, as initially deposited. Notably, PPMS described in column 6, lines 14-26 does not contain oxygen, as initially deposited. Instead, after completing CVD of PPMS, the deposited layer is exposed to UV light, converting the exposed PPMS into an oxide, PPMSO. Accordingly, only the UV exposed PPMS contains oxygen and not the PPMS as initially deposited. At least for such reason, Naik fails to disclose each and every element of claim 1. Wolf does not disclose or suggest and is not alleged to disclose or

suggest the subject matter missing from Naik. Accordingly, combination of the references cannot be considered to disclose or suggest every claim limitation. At least for such reason, claim 1 is patentable over Naik in view of Wolf. Claim 2 depends from claim 1 and is patentable at least for such reason. Applicants request allowance of claims 1 and 2 in the next Office Action.

Claims 1-4 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Sachdev in view of Wolf. Applicants request reconsideration.

The subject matter regarding claim 1 is described above. Pages 6-7 of the Office Action allege that Sachdev discloses the subject matter of claim 1 except for cutting the wafer into separated die and relies upon Wolf as allegedly disclosing the missing subject matter. Applicants traverse.

As may be appreciated from the discussion above regarding the deficiencies of Sachdev as applied to claim 10, such reference also is deficient in disclosing every limitation of claim 1. Specifically, Sachdev does not disclose or suggest that resist layer 8 described in column 4, lines 39-47 contains oxygen. Also, even though plasma polymerized organosilicon barrier film 7 contains oxygen, Sachdev does not disclose or suggest exposing some portions of barrier film 7 to energy while leaving other portions unexposed and altering physical properties of the exposed portions relative to unexposed portions. Further, the RIE of column 4, lines 47-51 does not disclose or suggest the claimed subjecting of exposed and unexposed portions to common conditions. Still further, the RIE of column 4, lines 52-58 does not disclose or suggest the claimed subjecting of exposed and unexposed portions to common conditions and providing a rate of removal influenced by altered physical properties of the barrier film 7. At least for such reasons, Sachdev fails to disclose or suggest every limitation of claim 1.

Wolf does not disclose or suggest and is not alleged to disclose or suggest the subject matter missing from Sachdev. Accordingly, combination of the references cannot be considered to disclose or suggest every element. At least for such reasons, claim 1 is patentable over Sachdev in view of Wolf. Claims 2-4 depend from claim 1 and are patentable at least for such reason as well as for the additional limitations of such claims not disclosed or suggested.


Claims 7-9 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Naik in view of Wolf and Leveriza. Applicants request reconsideration.

Claims 7-9 depend from claim 1 the subject matter of which is described above. The deficiencies of Naik in disclosing every limitation of claim 1 is also described above. Neither Wolf nor Leveriza remedy the deficiencies of Naik. Accordingly, combination of the references cannot be considered to somehow disclose or suggest subject matter that is absent from all of the references. Thus, claims 7-9 are patentable over the cited combination at least for their dependence from claim 1 as well as for the additional limitations of such claims not disclosed or suggested.

Applicants herein establish adequate reasons supporting allowance of claims 1-29, 31, and 32 and request allowance of all pending claims in the next Office Action.

Respectfully submitted,

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